carpels of *Angostura* develop into separate mericarps, while in *Galipea* a 5-parted capsule is formed. Although the structure of the fruit, apocarpous *versus* syncarpous, has been very useful in distinguishing the two genera, it may not prove to be absolutely reliable. Examples of rutaceous genera which may have capsular as well as apocarpous or at least subapocarpous fruits include *Esenbeckia*, *Evodia*, *Boninia*, *Melicope*, *Tetractomia*, *Pelea*, and *Myrtopsis* (Hartley, 1969).

Additional characters that can be used to separate the two genera may be found in the flowers. In *Galipea* the petals are united into a distinct, often curved tube, while in *Angostura* the petals are free or fused only at the base. The stamens of *Galipea* are inserted near the apex of the corolla tube as opposed to stamens inserted at the base of the disc in *Angostura*. Also the anthers of *Galipea* usually have a small basal appendage while those of *Angostura* lack an appendage. In an attempt to find other characters which would be useful at the generic level, pollen of the two genera was examined and found to be of value. Although material was not available for all species the grains of the species of *Galipea* sampled were large, suboblate to subspherical, coarsely reticulate, and 4–5-porate. In contrast are the medium large, prolate, reticulate, and 3-colporate pollen grains found in species of *Angostura*.

KEY TO THE CENTRAL AMERICAN SPECIES OF GALIPEA

a. Leaves unifoliolate; corolla tube stout, 1.1–1.4 cm. long, the lobes narrowly obovate, acute at the apex, 1.3–1.6 cm. long. ..... *G. panamensis.*
a. Leaves trifoliolate; corolla tube slender, 9–11 mm. long, the lobes oblong to narrowly obovate, obtuse at the apex, 4–5 mm. long. ..... *G. jasminiflora.*

Galipea panamensis Elias, sp. nov.

A *Galipea simplicifolia* (Nees & Mart.) Engler inflorescentiis paniculatis, 0.5–2 cm. longis, corolla tubulosa gracilis, lobis 5 mm. longis differt.

Arbores usque ca. 7 m. altae; rami teretes, leviter sulcati, murini vel bruneoli, glabri, lenticellati, lenticellae ± elevatae. Folia 1-foliolata, petiolata, petioli superne ± alati, expansi et indurati ad basin, articulati prope basin laminae, 9–16 mm. longi; lamina coriacea, elliptica vel anguste elliptica, basi attenuata, apice acuminata, pellucido-punctata, glabra, 11–21 cm. longa, 3–9.2 cm. lata, nervis lateralibus utroque 5–11-jugis subtus prominentibus. Inflorescentiae terminales et axillares; corymbi congesti, ca. 12–22-flori; pedunculi erecti vel semi-erecti, conspicue lenticellati, validi, 1.2–3.5 cm. longi. Flores albi; calyx campanulatus, pellucido-punctatus, puberulus, 3–4 mm. longus, lobis transverse ovatibus, apice acutis minute ciliatis, 0.5–1 mm. longis; corolla puberula, conspicue pellucido-punctata, 2.3–3 cm. longa, tubo cylindrico, arcuato in alabastro, 1.1–1.4 cm. longo, lobis in aestivatione imbricatis, anguste obovatis, apice acutis, dilatatis vel leviter recurvatis, 1.3–1.6 cm. longis, ad 3.5 mm. latis; stamina 6–7, inclusa, apicem tubi versus inserta, filamenta brevissima, haud 1 mm. longa, antherae fertiles binae, basifixae, longitudinaliter dehiscentae,

FIGURE 1. *Galipea panamensis*: a, branchlet with inflorescence, × ½, b, inflorescence, × 1½; c. mature bud showing superposed ovules, longitudinal section, × 3; d, cross section of ovary, greatly enlarged; e, mature capsule at beginning of dehiscence, × 1½; f, endocarp with seed, × 2½. a–f from *Dressler 3682* (holotype A).

4–6 mm. longae; staminodia libera, complanata, 6–8 mm. longa; stylus cylindricus, 10–12 mm. longus, stigmata 5, oblonga, 1–2 mm. longa; ovarium 5-carpellatum; loculi biovulati, ovulis plus minusve superimpositis, placentatio axilis. Capsulae 5-loculares, subglobosae, 1–1.5 cm. longae,

cocci basi apiceque connati, ventraliter ac dorsaliter carinati, dehiscentes a basi fere usque ad medium; endocarpium cartilagineum bivalvatum, 1-spermum, basi integrum, alae apice obtusae; semen ± orbiculatum vel obovoideum, lateraliter parum compressum, pubescens.

Panama. COLON: Santa Rita ridge lumber road, East of Colon, *Correa & Dressler 766* [fls., frts.] (MO), *Dressler 3659* [fls., frts.] (A, MO). PANAMA: Cerro Jefe, in coffee plantation, ca. 700 m. altitude, *Dressler 3682* [fls., frts.] (holotype A, isotype MO).

While most species of *Galipea* have trifoliolate leaves, *G. panamensis* differs in having them unifoliolate. Also, its corymbose inflorescence readily distinguishes this new species from all others in the genus in which the inflorescence is narrowly paniculate. Both *G. panamensis* and *G. jasminiflora*, known only from eastern Panama, presently represent the northernmost occurrence of the genus.

LITERATURE CITED

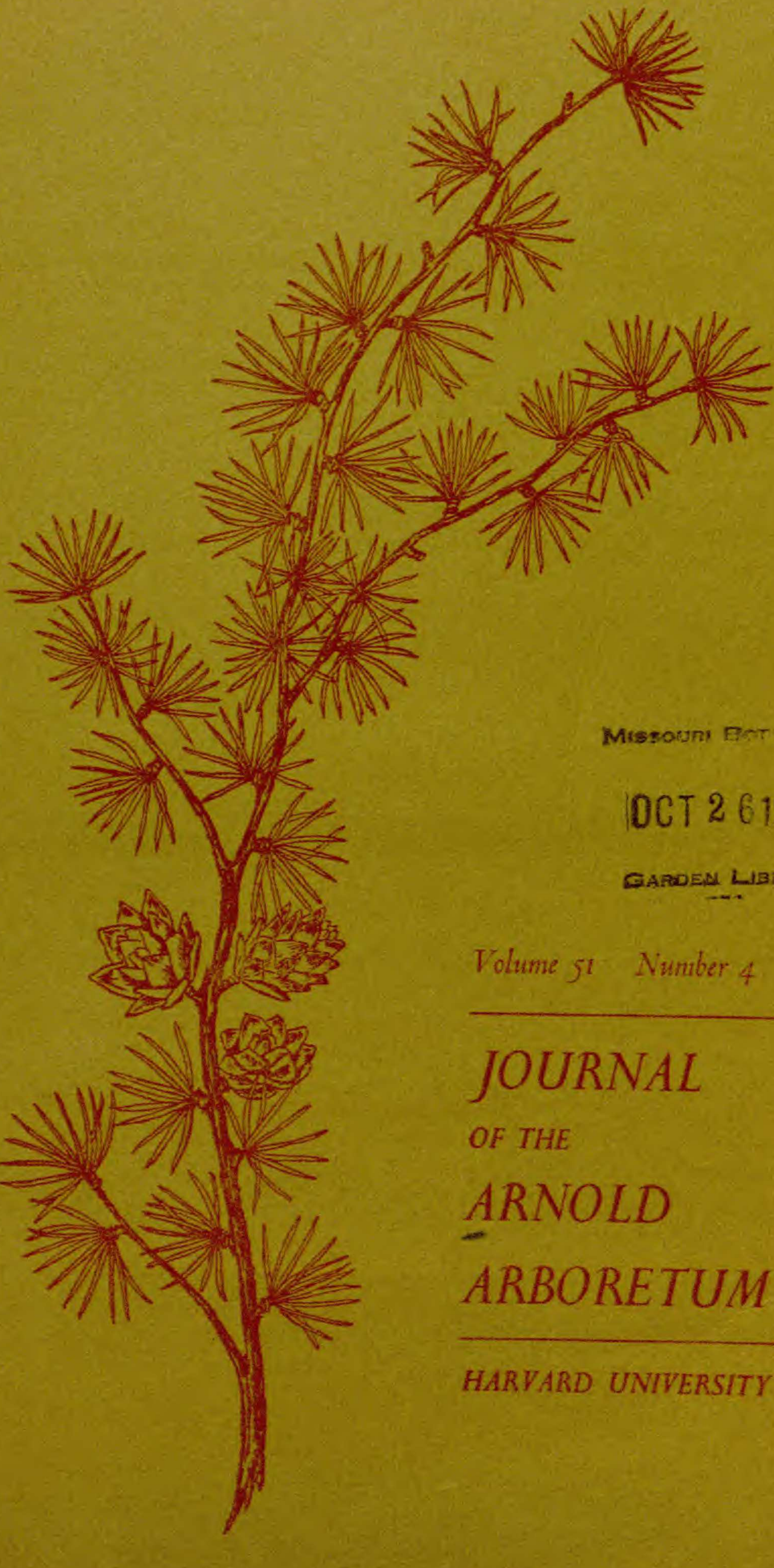
AUBLET, M. F. Pl. Guiane Française **2:** 662. *t. 269*. 1775.

ELIAS, T. S. The correct name for the genus *Cusparia* (Rutaceae). Taxon [in press]. 1970.

ENGLER, A. Rutaceae. *In*: MARTIUS, Flora Bras. **12**(*2*)**:** 78–195. *pls. 14–28*. 1874. [*Galipea* 95–99, *pls. 17–19*.]

HARTLEY, T. G. A revision of the genus *Flindersia* (Rutaceae). Jour. Arnold Arb. **50:** 481–526. 1969.

ARNOLD ARBORETUM
HARVARD UNIVERSITY



Volume 51 Number 4

JOURNAL OF THE ARNOLD ARBORETUM

HARVARD UNIVERSITY